

WHAT IS CLAIMED IS:

1 1. A method for transmitting packets between a plurality of end user systems
2 and one server, comprising:
3 in response to receiving an initial packet from an initiating end user system,
4 communicating with the server to establish a network session and obtain a network
5 session identifier;
6 adding an entry to a data structure associating a connection with the end user
7 system and the network session identifier;
8 in response to receiving a data packet from one transmitting end user system,
9 processing the data structure to determine the network session identifier associated with
10 the connection to the transmitting end user system; and
11 communicating the data packet from the transmitting end user system to the
12 server using the network session corresponding to the network session identifier.

1 2. The method of claim 1, further comprising:
2 encapsulating the data packet from the transmitting end user system with a header
3 including the determined network session identifier, wherein the encapsulated data
4 packet is transmitted to the server.

1 3. The method of claim 1, further comprising:
2 in response to receiving a data packet from the server, determining one network
3 session identifier included with the received data packet;
4 determining from the data structure the connection to one end user system
5 associated with the determined network session identifier; and
6 transmitting the data packet on the determined connection to one end user system.

1 4. The method of claim 3, wherein the network session identifier is included
2 within a header encapsulating the data packet from the server, further comprising:

1 removing the header and network session identifier from the data packet, wherein
2 the extracted data packet is transmitted on the determined connection.

1 5. The method of claim 4, wherein the data packet received from the end
2 user system is encapsulated in a Point-to-Point Protocol (PPP) packet and the connection
3 with the end user system comprises a standard telephone line and wherein the data packet
4 from the server is encapsulated in a PPP over Ethernet (PPPOE) packet having a header
5 including the network session identifier of the PPPOE network session over which the
6 PPPOE packet was transmitted.

1 6. The method of claim 1, wherein one network session identifier is obtained
2 from the server for each connection to one end user computer.

1 7. The method of claim 1, wherein the server comprises an Internet Service
2 Provider (ISP) server and wherein the end user computer communicates with the ISP
3 server to access a network through the ISP server.

1 8. A method for transmitting packets between a plurality of end user systems
2 and one server, comprising:
3 in response to receiving an initial packet from an initiating end user system,
4 assigning a network address to the end user system;
5 adding an entry to a data structure associating a connection with the end user
6 system and the network address assigned to the end user system;
7 determining one network session identifier of a network session on which data
8 packets from multiple end user systems are transmitted to the server; and
9 communicating the data packet from the transmitting end user system to the
10 server using the network session corresponding to the network session identifier.

1 9. The method of claim 8, further comprising:
2 encapsulating the data packet from the transmitting end user system with a header
3 including the determined network session identifier, wherein the encapsulated data
4 packet is transmitted to the server.

1 10. The method of claim 1, further comprising:
2 in response to receiving a data packet from the server, determining the network
3 address included with the received data packet;
4 determining from the data structure the connection to one end user system
5 associated with the determined network address;
6 transmitting the data packet on the determined connection to one end user system.

1 11. The method of claim 10, wherein the network session identifier is
2 included within a header encapsulating the data packet from the server, further
3 comprising:
4 removing the header and network session identifier from the data packet, wherein
5 the extracted data packet is transmitted on the determined connection.

1 12. The method of claim 11, wherein the network address comprises an
2 Internet Protocol (IP) address, wherein the data packet received from the end user system
3 is encapsulated in a Point-to-Point Protocol (Packet) and wherein the connection between
4 the end user system comprises a standard telephone line and wherein the data packet
5 from the server is encapsulated in a PPP over Ethernet (PPPOE) packet having a header
6 including the network session identifier of the PPPOE network session over which the
7 PPPOE packet was transmitted.

1 13. The method of claim 1, wherein the operations of assigning the network
2 address, adding the entry to the data structure, determining one network session identifier

3 and communicating the data packet are performed in a system separate from the server
4 and terminating on one end of the connections to the end user systems.

1 14. A system for transmitting packets between a plurality of end user systems
2 and one server on a network, comprising:
3 a processing unit;
4 a plurality of connections capable of being used to connect with end user systems,
5 wherein the plurality of connections are in data communication with the processing unit;
6 an adaptor capable of communicating with the server over the network, wherein
7 the adaptor is in data communication with the processing unit;
8 program code that when executed by the processing unit causes the processing
9 unit to perform:

10 (i) in response to receiving an initial packet from an initiating end user
11 system, communicating with the server to establish a network session and obtain a
12 network session identifier;
13 (ii) adding an entry to a data structure associating a connection with the
14 end user system and the network session identifier;
15 (iii) in response to receiving a data packet from one transmitting end user
16 system, processing the data structure to determine the network session identifier
17 associated with the connection to the transmitting end user system; and
18 (iv) communicating the data packet from the transmitting end user system
19 to the server using the network session corresponding to the network session
20 identifier.

1 15. The system of claim 14, wherein the program code when executed causes
2 the processing unit to further perform:
3 encapsulating the data packet from the transmitting end user system with a header
4 including the determined network session identifier, wherein the encapsulated data
5 packet is transmitted to the server.

1 16. The system of claim 14, wherein the program code when executed causes
2 the processing unit to further perform:
3 in response to receiving a data packet from the server, determining one network
4 session identifier included with the received data packet;
5 determining from the data structure the connection to one end user system
6 associated with the determined network session identifier; and
7 transmitting the data packet on the determined connection to one end user system.

1 17. The system of claim 16, wherein the network session identifier is included
2 within a header encapsulating the data packet from the server, wherein the program code
3 when executed causes the processing unit to further perform:
4 removing the header and network session identifier from the data packet, wherein
5 the extracted data packet is transmitted on the determined connection.

1 18. The system of claim 17, wherein the data packet received from the end
2 user system is encapsulated in a Point-to-Point Protocol (PPP) packet and the connection
3 with the end user system comprises a standard telephone line and wherein the data packet
4 from the server is encapsulated in a PPP over Ethernet (PPPOE) packet having a header
5 including the network session identifier of the PPPOE network session over which the
6 PPPOE packet was transmitted.

1 19. The system of claim 14, wherein one network session identifier is
2 obtained from the server for each connection to one end user computer.

1 20. The system of claim 14, wherein the server comprises an Internet Service
2 Provider (ISP) server and wherein the end user computer communicates with the ISP
3 server to access a network through the ISP server.

1 21. A system for transmitting packets between a plurality of end user systems
2 and one server on a network, comprising:
3 a processing unit;
4 a plurality of connections capable of being used to connect with end user systems,
5 wherein the plurality of connections are in data communication with the processing unit;
6 an adaptor capable of communicating with the server over the network, wherein
7 the adaptor is in data communication with the processing unit;
8 program code that when executed by the processing unit causes the processing
9 unit to perform:
10 (i) in response to receiving an initial packet from an initiating end user
11 system, assigning a network address to the end user system;
12 (ii) adding an entry to a data structure associating a connection with the
13 end user system and the network address assigned to the end user system;
14 (iii) determining one network session identifier of a network session on
15 which data packets from multiple end user systems are transmitted to the server;
16 and
17 (iv) communicating the data packet from the transmitting end user system
18 to the server using the network session corresponding to the network session
19 identifier.

1 22. The system of claim 21, wherein the program code when executed causes
2 the processing unit to further perform:
3 encapsulating the data packet from the transmitting end user system with a header
4 including the determined network session identifier, wherein the encapsulated data
5 packet is transmitted to the server.

1 23. The system of claim 21, wherein the program code when executed causes
2 the processing unit to further perform:

3 in response to receiving a data packet from the server, determining the network
4 address included with the received data packet;
5 determining from the data structure the connection to one end user system
6 associated with the determined network address;
7 transmitting the data packet on the determined connection to one end user system.

1 24. The system of claim 23, wherein the network session identifier is included
2 within a header encapsulating the data packet from the server, wherein the program code
3 when executed causes the processing unit to further perform:
4 removing the header and network session identifier from the data packet, wherein
5 the extracted data packet is transmitted on the determined connection.

1 25. The system of claim 24, wherein the network address comprises an
2 Internet Protocol (IP) address, wherein the data packet received from the end user system
3 is encapsulated in a Point-to-Point Protocol (Packet) and wherein the connection between
4 the end user system comprises a standard telephone line and wherein the data packet
5 from the server is encapsulated in a PPP over Ethernet (PPPOE) packet having a header
6 including the network session identifier of the PPPOE network session over which the
7 PPPOE packet was transmitted.

1 26. An article of manufacture for transmitting packets between a plurality of
2 end user systems and one server, wherein the article of manufacture causes operations to
3 be performed, the operations comprising:
4 in response to receiving an initial packet from an initiating end user system,
5 communicating with the server to establish a network session and obtain a network
6 session identifier;
7 adding an entry to a data structure associating a connection with the end user
8 system and the network session identifier;

9 in response to receiving a data packet from one transmitting end user system,
10 processing the data structure to determine the network session identifier associated with
11 the connection to the transmitting end user system; and
12 communicating the data packet from the transmitting end user system to the
13 server using the network session corresponding to the network session identifier.

1 27. The article of manufacture of claim 26, wherein the operations further
2 comprise:
3 encapsulating the data packet from the transmitting end user system with a header
4 including the determined network session identifier, wherein the encapsulated data
5 packet is transmitted to the server.

1 28. The article of manufacture of claim 26, wherein the operations further
2 comprise:
3 in response to receiving a data packet from the server, determining one network
4 session identifier included with the received data packet;
5 determining from the data structure the connection to one end user system
6 associated with the determined network session identifier; and
7 transmitting the data packet on the determined connection to one end user system.

1 29. The article of manufacture of claim 28,, wherein the network session
2 identifier is included within a header encapsulating the data packet from the server,
3 further comprising:
4 removing the header and network session identifier from the data packet, wherein
5 the extracted data packet is transmitted on the determined connection.

1 30. The article of manufacture of claim 29, wherein the data packet received
2 from the end user system is encapsulated in a Point-to-Point Protocol (PPP) packet and
3 the connection with the end user system comprises a standard telephone line and wherein

4 the data packet from the server is encapsulated in a PPP over Ethernet (PPPOE) packet
5 having a header including the network session identifier of the PPPOE network session
6 over which the PPPOE packet was transmitted.

1 31. The article of manufacture of claim 26, wherein one network session
2 identifier is obtained from the server for each connection to one end user computer.

1 32. The article of manufacture of claim 26, wherein the server comprises an
2 Internet Service Provider (ISP) server and wherein the end user computer communicates
3 with the ISP server to access a network through the ISP server.

1 33. An article of manufacture for transmitting packets between a plurality of
2 end user systems and one server, wherein the article of manufacture causes operations to
3 be performed, the operations comprising:
4 in response to receiving an initial packet from an initiating end user system,
5 assigning a network address to the end user system;
6 adding an entry to a data structure associating a connection with the end user
7 system and the network address assigned to the end user system;
8 determining one network session identifier of a network session on which data
9 packets from multiple end user systems are transmitted to the server; and
10 communicating the data packet from the transmitting end user system to the
11 server using the network session corresponding to the network session identifier.

1 34. The article of manufacture of claim 33, wherein the operations further
2 comprise:
3 encapsulating the data packet from the transmitting end user system with a header
4 including the determined network session identifier, wherein the encapsulated data
5 packet is transmitted to the server.

1 35. The article of manufacture of claim 33, wherein the operations further
2 comprise:
3 in response to receiving a data packet from the server, determining the network
4 address included with the received data packet;
5 determining from the data structure the connection to one end user system
6 associated with the determined network address;
7 transmitting the data packet on the determined connection to one end user system.

1 36. The article of manufacture of claim 35, wherein the network session
2 identifier is included within a header encapsulating the data packet from the server,
3 further comprising:
4 removing the header and network session identifier from the data packet, wherein
5 the extracted data packet is transmitted on the determined connection.

1 37. The article of manufacture of claim 36, wherein the network address
2 comprises an Internet Protocol (IP) address, wherein the data packet received from the
3 end user system is encapsulated in a Point-to-Point Protocol (Packet) and wherein the
4 connection between the end user system comprises a standard telephone line and wherein
5 the data packet from the server is encapsulated in a PPP over Ethernet (PPPOE) packet
6 having a header including the network session identifier of the PPPOE network session
7 over which the PPPOE packet was transmitted.

1 38. The article of manufacture of claim 33, wherein the operations of
2 assigning the network address, adding the entry to the data structure, determining one
3 network session identifier and communicating the data packet are performed in a system
4 separate from the server and terminating on one end of the connections to the end user
5 systems